DOES NOT CIRCULATE

Volume XIII JUNE 1952 Number 6

DISEASES OF THE NERVOUS SYSTEM

UNIVERSITY OF MICHIGAN

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

MEDICAL LIBRARY

CONTENTS:

LANGUAGE AND CONCEPTS IN MULTIDISCIPLINARY STUDIES 163
Nathan S. Kline

MEDICO-LEGAL ASPECTS OF EPILEPSY 166
I. W. Ruskin

PSYCHOLOGY OF "DAILY ROUTINE" 175
Edmund Bergler

IMPORTANCE OF THE DELIRIOID REACTION IN PSYCHIATRIC DIAGNOSIS 177
Leslie B. Hohman

REPORT ON SEVEN LOBOTOMY OPERATIONS 179
Clela Harkness

NEUROLOGICAL CLINICAL PATHOLOGICAL CONFERENCE 183

SANITARIA

ASSOCIATE EDITORS

A. E. Bennett, M.D.—Berkeley, California
Francis J. Braceland, M.D.—Rochester, Minn.
Franklin G. Ebaugh, M.D.—Denver, Colorado
Temple Fay, M.D.—Philadelphia, Pennsylvania
Milton H. Erickson, M.D.—Phoenix, Arizona
Hamilton Ford, M.D.—Galveston, Texas
Walter Freeman, M.D.—Washington, D.C.
George T. Harding, M.D.—Columbus, Ohio
A. Hauser, M.D.—Houston, Texas
Louis J. Karnosh, M.D.—Cleveland, Ohio
Frank H. Luton, M.D.—Nashville, Tennessee
Wm. Malamud, M.D.—Boston, Mass.
Karl A. Menninger, M.D.—Topeka, Kansas
Hans H. Reese, M.D.—Madison, Wisconsin
S. Bernard Wortis, M.D.—New York, N. Y.

Titus H. Harris, M.D.
Galveston, Texas
Editor-in-Chief

YEARLY SUBSCRIPTION $4.00
SINGLE COPIES 40 Cents
FOREIGN SUBSCRIPTION $4.50

George Bisgeir, B.S., LL.B.
Chicago, Illinois
Managing Editor

Founded 1879

RING SANATORIUM

Eight Miles from Boston at an Elevation of 400 feet

For the study, care and treatment of emotional, mental, personality, and habit disorders.

All recognized psychiatric therapies are used as indicated.

Cottage accommodations meet varied individual needs. Limited facilities for the continued care of progressive disorders requiring medical, psychiatric, or neurological supervision.

Consultants in all Specialties

CHARLES E. WHITE, M. D.
LOUIS BRENNER, M. D.
WILLIAM R. SHELTON, M. D.
Associates

BENJAMIN SIMON, M. D.
Director

ARLINGTON HEIGHTS, MASSACHUSETTS
Telephone AR 5-0081

FRANCIS W. RUSSELL
Executive Secretary

HARDING SANITARIUM

WORTHINGTON, OHIO

For Nervous and Mental Disorders

NINE MILES NORTH OF STATE HOUSE — COLUMBUS

GEORGE T. HARDING, M.D.
HARRISON S. EVANS, M.D.
Medical Directors

CHARLES L. ANDERSON, M.D.
Clinical Director

L. HAROLD CAVINESS, M.D.
CHARLES W. HARDING, M.D.
JOHN A. WHEELDON, M.D.
NELLIJA RUBENIS, M.D.
RAY M. KELLOGG, M.D.

TELEPHONE COLUMBUS FR. 2-5367

Compton Sanitarium

AND

Las Campanas Hospital

COMPTON, CALIFORNIA
(Near Los Angeles)

Compton Sanitarium is a private psychiatric hospital with 120 beds. Emphasis is given psychotherapy by a staff of resident psychiatrists. Other treatment procedures are duly evaluated and administered. Careful records are maintained. There are psychiatrically trained graduate nurses; student nurses through affiliation; nursing attendants; dietitian; occupational therapist; recreational therapist; hydrotherapist; masseuse. Las Campanas Hospital (43 beds) provides adjunct general hospital facilities. Compton Sanitarium and Las Campanas Hospital are approved by the American College of Surgeons.

G. CRESWELL BURNS, M.D., *Medical Director.*

BEVERLY HILLS CLINIC and SANITARIUM

For

The Study and Treatment of Nervous and Mental Diseases

218 N. WESTMORELAND — DALLAS 11, TEXAS

This sanitarium is a psychopathic hospital with a home-like environment and is equipped to treat psychiatric and neurological cases in a most scientific manner by means of psychotherapy, occupational therapy, recreational therapy, and physiotherapy, including insulin and electroshock treatment as well as psychosurgery. There is a trained psychologist as well as a trained social worker. An X-ray machine and an electroencephalograph are available.

ARTHUR J. SCHWENKENBERG, M.D.
Medical Director

JOHN C. POWELL, JR., M.D.
Associate Psychiatrist

CHRISTINE ALLOWAY, M.D.
GUY B. FAIN, M.D.
Resident Psychiatrists

JOSEPH L. KNAPP, M.D.
Associate Psychiatrist and Clinical Director

STEPHEN WEISZ, M.D.
ROBERT E. WINN, M.D.
Visiting Neuropsychiatrists

VOL. XIII JUNE 1952 No. 6

Published monthly by
PHYSICIANS POSTGRADUATE PRESS
277 Broadway, New York 7, New York

EDITORIAL OFFICES
UNIVERSITY OF TEXAS SCHOOL OF MEDICINE
800 Avenue B., Galveston, Texas

Entered as second-class matter at the Post Office at New York, N. Y.

DISEASES of the NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

Language And Concepts In Multidisciplinary Studies

NATHAN S. KLINE, M.A., M.D.
Worcester, Massachusetts

The analogy of the blind men sent to determine what manner of object an elephant was, is frequently advanced both as an argument and as a technique for multidisciplinary research. When the first blind man examined the elephant he chanced upon the tail and described the animal as a snake; the next blind man, having embraced a leg, was quite sure he was examining a tree; the third, having come in contact with a side of the animal, insisted that it was something like a barn wall; and the fourth, having grasped the ear, could not understand how the others were not also aware that they were examining a new variety of palm leaf. Presumably one is supposed to conclude that in a series of conferences the blind men were able to arrive at an adequate description of an elephant.

Being both scientists and gentlemen the blind men could probably agree that they were all describing different aspects of the same object, and presumably would publish a book similar to a number now in existence. Were each to examine the same part in a large number of elephants, certain significant correlations between size, weight, roughness, and other qualities might be found. Further, the addition of other blind men assigned to examine the eyes, the trunk, etc., could serve only to complicate rather than simplify the picture. Even were one to allow the blind men to interchange positions it is dubious that they could ever describe an elephant if their reports were limited to their particular "specialty."

It is conceivable that such a group of blind men might be willing to momentarily forego their "specialties" and on the basis of their past experience hypothesize or "construct" an animal having characteristics that might fit the data collected by each of them. The data collected on subsequent experiments would serve to confirm, reject, or modify their "constructed" or "model" elephant. In other words, since analogies can become cumbersome, unless the same construct can be tentatively accepted by the physiologist, the psychologist, the sociologist, the biochemist, and data selectively sought for to confirm a particular common construct, there is small prospect that multidisciplined research will be productive of what it seeks.

The following pages propose such a "model" which has received this tentative acceptance by a number of scientists in different fields who have felt the need for an integrated construct. My discussions with them have had a great deal to do with the present formulation and in a very real sense I am merely the spokesman. There is by no means unanimity that this is either the only or the best formulation and unquestionably, when our expectation that we will be able to carry out such a program is fulfilled, it will lead to many modifications. I must, therefore, assume sole responsibility for the particularization which follows, although most of the general principles are the result of the group's activity.

From Worcester State Hospital, Department of Mental Health, Worcester, Mass.

The group's difficulty at the present time is that, like the blind men, each of the specialists expresses himself within the framework of his own science. Both the language and the hypothetical constructs on the basis of which particular data are selected, are not only unfamiliar, but cannot be translated into the constructs and language of a different science. The sociologist listens with confusion to reports on albumin-globulin ratios and beta 17 ketosteroids, while the biochemist and physiologist are either amused or bored by such alien concepts as level of aspiration or penis envy. The psychiatrist, like a centipede with one foot each in a hundred different places, will usually move in the correct clinical direction, but more on the basis of intuitive evaluation of the importance of each factor than an explicit rationally justifiable integration.

The present state of affairs was inevitable in the development of the separate sciences. Now, however, that instruments of measurement, prediction and control have been developed it is equally inevitable that an interdisciplinary science must evolve. In the development of a particular science the "individual differences" are ignored in establishing the validity of a generalization which can be applied in broad terms to a great number of individuals. Such generalizations view one particular aspect of behavior in a great number of individuals and necessarily ignore all the other attributes of the individual. The mathematics and statistics used to validate these generalizations are borrowed from the physical sciences where, in Warren Weaver's term, there is unorganized complexity. These methods prove totally inadequate when interest is centered on a particular individual or a relatively small group of individuals, (where "organized complexity" is the order of the day). Methods which are suitable for mass production, explanation and control leave us helpless before the individual case.

Common sense is considerably ahead of science in recognizing the characteristicness of individual behavior. Although I know nothing of Winston Churchill's chess game —in fact, I don't even know if he plays chess —I would feel reasonably certain that I could characterize the kind of a game he would play. We often say "how typical" or "just like him" when we hear of unusual activities on the part of the people we know. To make overt and manifest these generalizations, which we use to predict and even control human behavior, seems to be the type of "science" we are groping toward when we do multidisciplinary studies.

In a recent paper,[1] Gerard and I have proposed a general approach which is capable of producing an interdisciplinary science. In brief, the method consists of determining attribute clusters without regard to the disciplines from which the data are obtained; a sort of "let the clusters fall where they may." If the occurrence of such clusters is reliable, those attributes which do cluster should be suggestive of concepts under which they can then be subsumed. Once such an interdisciplinary taxonomy has been established, investigation of time and relatedness sequence would make possible the determination of causal relationships, the role of environmental influences, and, ultimately, adequate control (i.e. therapy or prevention).

The approach of utilizing cluster or multivariate analysis is far from being original with us: what is an innovation is the attempt to establish clusters and factors which incorporate attributes from the different sciences.

Several pilot studies have indicated the existence of such clusters. In an investigation of 455 consecutive schizophrenic male admissions, it was found that timidity, detachment, lack of sociability, admission before the age of 27, infrequent alcoholism, ectomorphic habitus and multiplicity of diagnoses tended to group. These patients frequently, but not constantly, were diagnosed as hebephrenic. Another grouping centered around sexual perversity, lack of interest in the opposite sex, dependent personality, endomorphic habitus, infrequency of marriage. A third group consists of schizophrenics who were aggressive, sociable, relatively old on admission, of less than high school education, and of mesmorphic habitus.

The relationship of these factors was established by multiple correlation rather than by factor or multivariate analysis. These groups should, therefore, be regarded as

highly tentative. The lack of operational definitions of the attributes and the manner of their collection was inadequate to expend the effort needed for the more complete analysis. We now plan to collect the necessary data for the establishment of these clusters using strictly operational definitions.

On two other groups of patients we have applied this same principle to various laboratory procedures and have again found several types of groupings among such attributes as albumin-globulin ratio, 17 ketosteroid excretion, autonomic reactivity as measured both by tilt-table and injections of mecholyl and adrenalin, urinary sodium and potassium, ratio of loops and plexi in finger nail capillaries and body habitus.

In a very detailed study[2] of biochemical functions of 28 schizophrenics, in which mean levels of sugar, cholesterol, protein, albumin, globulin, etc., were determined over a three day period, it was found that in cross correlations of each biochemical function with every other such function, a particular individual maintained a surprisingly consistent relationship to the rest of the group regardless of the indices used.

These investigations were all of pilot nature and were primarily undertaken to standardize procedures and to determine their probable worth for inclusion in our first major effort to establish interdisciplinary clusters from physiology, biochemistry, psychology, and sociology. Although thus far only two or three of the disciplinary approaches were used simultaneously, the fact that successful groupings do occur indicates a likelihood of clusters that will draw items from all of the disciplines.

These preliminary experiments have, as we hoped, suggested concepts and language which are universal to all biological sciences. When structure is viewed as a reaction of the organism occurring through a considerable time period, it becomes possible to collect data in such a manner that the description of attributes in each of the sciences can be made in terms of: (1) variability of the attribute when there is no known external stimulus, (2) the external stimuli needed to produce a predetermined degree of reaction (i.e. threshold of response), (3) intensity of response to known external stimuli, (4) duration of such response.

By the measurement and description of individuals in these terms it is possible to establish a "pattern of reactivity" characteristic for an individual which cuts across the usual disciplinary boundaries. On the basis of such patterns established in a few of the disciplines we have already been able in some cases to predict behavior before a new attribute was tested. Further, the patterns of reactivity of "normal individuals" are suggestively different from those carrying a clinical diagnosis of schizophrenia.

The effective demonstration and development of such an inter-disciplinary science—a science of individuality— is the work of many years. Only actual attribute analysis can demonstrate what can and what cannot be included. Our description of patterns of reactivity in terms of variability, threshold, intensity, and duration of response will probably be superseded by more refined types of measurement and models. The primary purpose of this paper, therefore, is to suggest rather than demonstrate a new approach to the study of individual organisms, both normal and pathological.

Author's Note: Grateful acknowledgment is made to the Wenner-Gren Foundation for its encouragement and support of the research on which this paper is based.

REFERENCES

1. Kline, N. S., and Gerard, D. L.: Taxonomy of Mental Disease (in press). Summarized in *Science*, Feb. 22, 1952, Vol. 115, No. 2982.
2. Kline, N. S., Wertheimer, N., et al.: Patterns of Biochemical Response (in press).

BUY U.S. SAVINGS BONDS • SAVE FOR YOUR INDEPENDENCE •

Medico-Legal Aspects of Epilepsy

I. W. RUSKIN, M.D.
Los Angeles, Calif.

Introduction

Although society eventually recognizes every aspect of human welfare and behavior in its customs, morals and laws, often this recognition is belated due to erroneous or incomplete understanding. Even though the epileptic cannot fail to be noticed because of his violent manifestations, society has failed to fully accept the present medical knowledge of this condition.

A brief historical review of social attitudes toward this disease may help explain the anachronism of the law in its effect on epileptics. The names applied to epilepsy have been as protean as the disease itself. Epilepsy has been called since ancient times Morbus Sacer, the sacred disease, a name which indicates both its awesomeness and its association with the gods.[1] At a later date it was termed Morbus Demoniacaus, because the victim was believed to be possessed of a demon.[2] It was likewise named Morbus Comitiales, the disease of the assembly, because when a man fell into a fit in the Comitia, business was at once suspended, for the superstitious Romans looked upon epilepsy as a visitation from the gods. In Roman law, this condition was described as Morbus Sonticus, the serious disease, and one that exempted its victims from public duties and responsibilities.[3]

Today many segments of society still associate epilepsy with the supernatural. Historically our pattern of social integration of epileptics results from equating this disease with lunacy, imbecility, and genetic degeneracy, thereby creating a hopeless prognosis for its sufferers and failing to make beneficial use of the science of epileptology. Paradoxically, society too often unjustly places the burden of responsibility for his social behavior on the epileptic when it is only a manifestation of the disease whose symptomatology is little understood. The path of progress from traditional attitudes to modern science and humanism requires a bridge of acceptance built on education and understanding.

Legal Aspects

The legal aspects of epilepsy may be grouped into three main divisions, each with overlapping subdivisions.

1. Responsibility of the epileptic for violation of criminal, moral and civil laws, in the commission of crimes and torts, and his obligations in relation to contracts.

2. Restrictions on the activities of the epileptic in the exercise of his civil rights in the sphere of marriage, sterilization, immigration, operation of motor vehicles, employment opportunities, workmen's compensation, and military service.

3. Responsibility of society to the epileptic for his well-being through custodial care, therapy and eduction. (Part 3 is not reproduced in this article. It will be available in the reprint.)

There is no clear-cut legal definition of epilepsy as a disease entity. The judicial concept of the disease varies with different jurisdictions as does the need to apply this concept to the law. Generally, epilepsy is defined as follows:

"It is a disease of the brain which is manifested usually by neuromuscular spasms, occurring suddenly and aperiodically, in paroxysms, accompanied as a rule with a partial or complete loss of consciousness, paraconsciousness, and/or other mental symptoms, which may precede, follow, appear in the interval between and/or substitute for the convulsions themselves, being part of the syndrome."[4]

Legal enactments affecting epileptics follow generally well-established principles of law and are designed to protect the epileptic and society from the manifestations, symptoms and consequences of the disease. There is no discrimination in law against the epileptic per se, but conservatism in accepting new scientific data, and the need to follow well-established legal principles that can be applied to recognized classes, sometimes work hardship in the individual case and may appear discriminatory. For with such a protean disease, in which mental symptoms are seen in profusion and variety, it is small wonder that numerous opinions should arise.

There are two extreme views in respect to epilepsy. On the one hand some physicians seem to hold that if a patient ever had a

genuine epileptic seizure, he is necessarily of impaired mind. For them the slightest indication that a person even at a remote period has had a convulsion, is enough to raise a presumption that he is irresponsible. This is not a scientific view, and it is not a legal presumption. On the other hand, there are those, especially of the bench and bar, who cannot conceive that one may have a clouded mind while suffering only occasional convulsions.

Prejudice is aroused partly by the fact that the defense plea of epileptic insanity has been grossly abused in our American courts. The more important fact is that the mental symptoms in epilepsy are not matters of common observation and their demonstration usually requires very exact study.[3]

Criminal Responsibility of the Epileptic

The courts are particularly concerned with the epileptic's maniacal activities which sometimes take place during the state of automatism or psycho-motor epilepsy. And they say this: "There is no other form of insanity so frequently the cause of murder," and "the epileptic is one of the most dangerous subjects we have to deal with in our asylums." In the epileptic state, clear consciousness is obscured and the patient has no recollection of what he did during the fury. These two elements, clouded consciousness and automatism, are such common features in epilepsy that they should be considered as part of the paroxysms. But this automatism gives the acts of an epileptic the misleading appearance of deliberation. In this state, no genuine epileptic could be accounted responsible.[5]

Chief Justice Gibson, in a Pennsylvania case, referred to the insane impulse, "as if an unseen ligament is pressing on his mind, forcing him without his will to do this act,"[6] and Lord Lenman in an English case said "as if some controlling disease was in truth the active power within him which he could not resist, so that he is not responsible."[7] In this condition, consciousness is not necessarily lost nor is the patient necessarily under the influence of delusions, but he is in a state of diminished self-control, which is just as truly a part of the disease as the convulsion itself.

The generally accepted American rule on insanity as a defense against a criminal charge has been stated by Chief Justice Shaw and has become the text book rule:

> "A man is not to be excused from responsibility if he has capacity and reason sufficient to enable him to distinguish between right and wrong, as to the particular act he is then doing, a knowledge and consciousness that the act he is doing is wrong and criminal, and will subject him to punishment."[8]

Although the epileptic may be laboring under partial insanity, if he understands the nature and character of his act and its consequences, if he has a knowledge that it is wrong and criminal and a mental power sufficient to apply that knowledge to his own case and to know, that if he does the act, he will do wrong and receive punishment, then such partial insanity is not enough to exempt him from responsibility for criminal acts.[9] In a New York decision the court stated that "The law does not recognize a form of insanity in which the capacity of distinguishing right from wrong exists without the power of choosing between them."[10]

The so-called "moral insanity" or "emotional insanity" or irresistible impulse theory in which there is consciousness of right and wrong without the will power to control the act has been adopted in few jurisdictions, and even in these has not been applied consistently. This doctrine is considered the most liberal rule for interpretation of insanity as a defense against criminal responsibility. However, a defendant cannot avail himself of this rule as a matter of right.[11] In a Federal decision it was held that epileptic insanity will not be admitted as a defense in a criminal action, where it is not different in its actual manifestations from emotional insanity.[12]

Though there is a lag, the judiciary attempts to keep abreast of science. In an 1876 murder case there was testimony that the defendant was an epileptic, last seen by a doctor four months before and had a seizure seven months prior to the criminal act. The court ruled that this testimony was inadmissible since it was not direct proof material and relevant to the state of mind of the defendant at the time of the crime.[13]

Many courts now have taken a different stand relative to the introduction of evidence

of the epileptic condition. There is a legal presumption that everyone is sane unless insanity is proven, the burden of proof being upon him who makes the plea. However, when substantial testimony is offered of the nature of a condition such as epilepsy, or psycho-motor epilepsy, there is then established a prima facie case of lack of guilt by reason of insanity.[14] After establishment of a prima facie defense, then the burden of proving the sanity of the defendant shifts to the prosecution. A presumption in law is simply a hypothesis based upon probability; it is always open to attack.

The problem of responsibility in epilepsy cannot be reduced to the question "whether the patient was conscious." Most epileptics are unconscious during their spells, completely so in grand mal, partially so in petit mal and psycho-motor epilepsy. Nor can the intervals of clouded mentality between seizures be ignored. During these times the epileptic cannot be called a responsible being. To such an unfortunate applies particularly the dictum of Lord Chancellor Lyndurst, "that if a man's mind is impaired in part, he is of unsound mind."[14]

All criminal acts perpetrated by an epileptic may not be the result of the disease, but in the event of a criminal act, the mental disorder must be suspected, particularly in the absence of motive or of attempt to hide from the consequences of the act. However, proof of epilepsy is no presumption of insanity.[15]

Epileptic insanity is not incompatible with both crime and genius as the case of Charles Cawley illustrates. This youth killed his mother, three sisters, and a brother. He was acquitted. The defendant pleaded epileptic insanity aggravated by overwork while perfecting a patent. When in jail, awaiting trial, the prisoner received the letters patent.[16]

In a New York case, a defendant was accused of creating a nuisance (urinating in public) while in a state of automatism. He was not held responsible. He knew right from wrong in the abstract but not at the time of his act, due to paraconsciousness.[17,18]

In a California case the defendant, subject to epileptic attacks, became ill at the home of a friend. After resting a while and believing that he would be all right, he started to drive home. He had an attack and while unconscious, ran down and killed a pedestrian. The court held that if this person was suffering from a state of clouded understanding and of obstructed will because of his epilepsy prior to his departure for home, then he was not guilty of a deliberate act. An act done in the absence of the will is not anymore the behavior of the actor than is an act done contrary to his will.[19]

In a Michigan case, an epileptic had been accused of a crime and the State demanded that he be committed as an insane person. It was urged that by reason of his epilepsy, this defendant was unable to properly cooperate with counsel, and did not comprehend the meaning and situation of the trial. The defendant showed no signs of feeblemindedness in court. Upon appeal from the ruling of the lower court the appellate court distinguished between insanity and epilepsy[20] based upon a statute, which reads:

"The term insane persons as used in this act, includes every species of insanity and extends to every mentally deranged person and to all of unsound mind, other than feeble-minded, idiots, imbeciles and epileptics."[21]

However, in many statutes where provision is made for the care of epileptics, feeble-minded, idiots and imbeciles, all are equated by juxtaposition, but only if the epileptic is also mentally deficient. It is to be noted that epileptic patients are sent to institutions devoted to their care and not to hospitals for the insane.[22] In a Pennsylvania case, it was held that epilepsy may cause insanity but does not constitute it and the two are not the same nor are they equivalent.

Doctor William F. Shanahan, Superintendent of Craig Colony, New York, stated:

"Contrary to the assertions of some writers, only a small number of epileptics are mentally defective, essentially delinquent, or asocial. Most of those showing such tendencies become so because of early environmental influences."

As to the frequency of epilepsy in criminals, a survey disclosed that out of a population of 642 criminally insane in Broadmoor, only 28 were epileptics. The incidence of epilepsy in criminals is not greater than in the general public.[23]

Civil Responsibility

Whether epilepsy has impaired the mind to such a degree as to incapacitate a person in civil transactions, may be extremely diffi-

cult to determine, and in many cases impossible to decide. Existence of epilepsy should always give rise to an inquiry as to insanity, notwithstanding the fact that most epileptics are considered sane. Occasion may arise when an epileptic may be insane, and will do what, were it not for the epilepsy, he would not have done. Nor should any arbitrary rule be drawn by court or physician as to how an epileptic should act when insane. The responsibility of epileptics in civil matters is similar to that of other insane people. Its particular application to the epileptic is that during the state of psychomotor activity or automatism, he may closely simulate a state of perfect consciousness but he nevertheless may be paraconscious and entirely oblivious of himself or his surroundings and have no recollection afterwards of what occurred. He may enter into a contract and under those circumstances he is not held responsible.[24]

While epilepsy may produce mental incompetency which will invalidate a deed,[25] the courts have sustained the wills of epileptics on the same theory that they have sustained the wills of insane people when proof is offered, that the making of the will was during a lucid interval.[14]

Drowning during a convulsive seizure is accidental, within the meaning of an insurance policy insuring against accidental death.[26] In another case, it was held that a denial knowingly made by an epileptic and his parents, the beneficiaries, that he did not have epilepsy is a material misrepresentation as to his health so as to void the policy.[27]

A taxicab driver suffered an epileptic convulsion resulting in an accident injuring the passenger. The court held that he was not negligent for the way in which he controlled the vehicle during the seizure, but that negligence must be predicated upon his driving the cab at all when he has epilepsy. It was held that since the company did not inquire whether their employee had ever suffered from epileptic seizures, it did not exercise that degree of care which it should have in selecting its drivers.[28]

A passenger was injured in a bus operated by a chauffeur who for the first time suffered an epileptic seizure. This man had been in the employ of the carrier for some time and had been in apparent good health. The company had exercised due care in the selection of the operator and had no reason to anticipate that he would suffer such an attack. The claimant here pressed the argument not on the theory that the carrier was negligent, but that the carrier had breached the contract to carry the passenger safely to his destination. The court stated:

"If the obligation of the carrier to its passengers is such as to make it liable for a wilfull injury inflicted by a servant upon the passenger, such an obligation must also carry a liability for an unconscious injury inflicted by the servant upon the passenger."

Such an act or omission is a breach of the contract of transportation—the masters themselves would be liable for this.[29]

In an Iowa case, the owner of an automobile was held liable for damages for allowing an incompetent (epileptic) to drive his car.[30]

Marriage and Epilepsy

At common law, an insane person did not have the legal capacity to contract marriage. This rule applied to an epileptic if it were determined that he was non compos mentis.[32] Certain states now prohibit the marriage of epileptics. From the context of the statutes, it is plain that this prohibition arises from eugenic considerations rather than lack of mental capacity. Thus, in the State of Washington, such marriage is prohibited unless the woman be over forty-five years of age. Infraction of this law is punishable by a fine and imprisonment.[34] New Jersey and Michigan have even more drastic laws but permit marriage on certification of two licensed physicians that the person has been completely cured of such insanity, epilepsy, imbecility, or feeble-mindedness and that there is no probability that he will transmit the defect or disability to issue of the marriage.[35]

A Connecticut statute in this regard enacted in 1895[36] was challenged and the court holding the law to be constitutional, rendered the following opinion:

"To impose such a restriction upon the right to contract marriage, if not intrinsically unreasonable, is no invasion of the equality of all men before the law, either for their protection or the protection from them of the community at large, for the preservation of public health, if there are substantial grounds for believing that such determination is

supported by the facts upon which it is apparent that it was based.

"The class of persons to whom the statute applies is not one arbitrarily formed to suit its purpose. It is certain and definite. It is a class capable of endangering the health of families and adding greatly to the sum of human suffering. Between the members of this class there is no discrimination, and the prohibition of the statutes cease to operate, when by the attainment of a certain age, by one of those whom it affects, the occasion for the restriction is deemed to become less imperative."[37]

A Kansas enactment providing similar protection for the public, reads as follows:

"No woman under the age of forty-five years or man of any age, except he marry a woman over the age of forty-five years, either of whom is epileptic, imbecile, or feeble-minded, or inflicted with insanity, shall hereafter intermarry or marry any other person within this state. It shall be unlawful for any person to marry such feeble-minded, imbecile, or epileptic person, or anyone afflicted with insanity. Children born after a parent was insane shall not marry, except under the above named conditions, unless the parent or parents of such children shall have been discharged from the State Hospital for the Insane or any other legally constituted institution for treatment of the insane, more than nine months before the birth of the child, as cured, and remained cured for a period of twenty years after such discharge."[38]

Under Arizona annulment and divorce statutes, it was held that physical incompetency (epilepsy) is not a ground for annulment, but of divorce only, notwithstanding all other forms of voidable marriages are subject to annulment.[39]

In New York, it was held that though epilepsy is not of itself a ground for annulment, if the epilepsy is so severe that the wife is unable to lead a normal marital life, it may entitle husband to annulment, if wife's condition was deliberately concealed before marriage, and parties did not cohabit after husband learned of the wife's condition.[40]

In another New York case, it was held that the action for annulment fails where there was a concealment of the physical defect (epilepsy) but no proof that plaintiff would not have entered into the marriage even had he known of the concealed fact.[41]

Sterilization

There are thirty states which have statutes permitting human sterilization. After the feeble-minded, idiots and imbeciles, as those to whom the legislation applies, the epileptic is the next most frequent group among the thirty-four classes listed. Five states (California, Mississippi, Nebraska, Oklahoma, West Virginia) require sterilization only when the subject is to be discharged from an institution. Ten states (California, Idaho, Indiana, Iowa, Kansas, Michigan, New Jersey, New York, North Dakota, Oregon) require sterilization only when no probability of improved mental condition of the patient seems likely. Five states (Delaware, Idaho, Michigan, Oregon, Vermont) authorize sterilization not only in institutional patients but in outside cases as well.[42] These laws have been held constitutional, not penal in nature nor inflicting cruel or inhuman punishment.

Swedish law regulating the marriage of epileptics was first enacted in 1757. This prohibited the marriage of an epileptic unless he or she voluntarily submitted to sterilization (in cases where the woman was of child-bearing age) or unless one produced a medical certificate indicating "that it cannot be shown that his epilepsy was due mainly to endogenous causes." The designation of idiopathic (true) epilepsy and symptomatic epilepsy has been replaced by the use of endogenous and exogenous etiology, and subclassified as unknown, probable and known etiology.[43]

Workmen's Compensation

Prior to the enactment, early in this century, of workmen's compensation laws, an injured employee could recover damages for his injuries and loss of earning capacity only by bringing an action based upon negligence of the employer, and that the injuries were not caused by his own negligence, the negligence of his fellow employees, or the natural assumed risks of his employment. In most instances the injured employe could not establish these facts. This worked injustice on himself and the community which often had to assume the burden of his care.[44]

These new statutes placed the cost of compensation for industrial injuries on the public generally, by adding these charges to the cost of production, substituting statutory compensation for the common law liability for negligence and the defenses thereto.[45,46] These laws apply only to injuries "due to accidents arising out of and in the course of

employment." (Most states now also include compensation for occupational diseases.) While "accident" and "injury" are not synonymous the accident produces the injury and in point of time they are concurrent. Accident has been defined as "some unusual, fortuitous and unexpected happening, which caused the injury."[47]

In the case of a disease such as epilepsy, which in itself can cause loss of consciousness and disturbance of equilibrium resulting in injury from falling or stumbling in a hazardous environment, there has been much controversy and lack of uniformity as to whether such injuries are compensable. Some states hold that if the employment provides a hazardous environment which could aggravate the injuries resulting from the fall, then the injuries are compensable. An example is that of an epileptic painter who is required to work on a scaffold. A fall from this increased height during a convulsive seizure would be a factor in the severity of the injury.

A leading case[48] on this point, though not involving epilepsy, is a Minnesota decision which has been followed in many jurisdictions[51-57] but repudiated in other.[58] The facts were as follows:

The claimant, Stenberg, suffered from an incapacitating knee joint which would lock and cause great pain, requiring that he sit down and manipulate it back into position. On the occasion of the accident he was seen to put his hands on his knee, topple, and fall forward, striking his head on a corner of a desk and falling to the floor. An autopsy revealed that he had suffered a skull fracture and a rupture of the middle meningeal artery, causing a hemorrhage and resulting in death. The court stated:

"The defective knee was but a contributing factor as a prelude to the fall; the fall itself is what caused death, not the trick knee. So, if the fatal accident arose out of the employment we would then have the combination of an injury arising out of and in the course of the employment. This raises the problem of finding the proximate cause. The proximate cause is lucidly and accurately defined as follows: 'when an event is followed in natural sequence by results it is adapted to produce, or aid in producing that is a consequence of the event, then the event is the cause of the result.' The fall was an event which was followed by an injury, which the fall was adapted to produce."[48,49]

In a Louisiana case, an epileptic worker, while sitting near a stove in the watchmen's shanty suffered a convulsive seizure. He fell against the stove and burned himself severely. It was held that he was entitled to compensation because the employment subjected him to increased hazard, i.e., sitting near the stove.[50]

Two New York cases point up the inconsistency of decisions in this regard. In one case a painter suffered an epileptic seizure causing him to fall from a scaffold and fracture his skull. The court stated that this was no accident, but that he fell because of internal disorders and the injury resulted from no added risk of his employment.[61]

In another New York case a teamster fell from his truck during an epileptic attack, the wheels of the truck passing over his body causing his death. The court held that he had increased his risk by his employment, and that falling from the truck and being injured was incidental to, and a risk of his employment. Though the fall might have been caused by an epileptic seizure, death was due to the employment and was compensable.[62]

Employers, therefore, are loath to hire one who by reason of some predisposition, may increase the cost of compensation. An employer is prohibited in most states from demanding a waiver of the right to Workmen's Compensation in case of industrial injury. However, it is the common experience of most employers, that where a known handicapped employe (i.e. an epileptic), is placed in a suitable job, "that it will not affect the accident rate unfavorably"[63] and that workmen's compensation premiums are not increased because of the employment of the handicapped, including epileptics.[64] Some states have a special fund which protects employers against the increased cost of compensation benefits for previously disabled or handicapped employes. For example, New York Workmen's Compensation Law provides that the employer pays only for the immediate injury directly attributable to the employment, while the special fund pays the proportion of compensation attributable to the prior incapacity. This law has facilitated the employment of the handicapped, including epileptics.[65,66]

An injured employe is entitled to reasonable medical care under the various enactments. He must, however, submit to proper and reasonable medical and surgical examination and treatment. Refusal of such examination or treatment releases the employer from liability. In one situation a claimant was denied further compensation on developing epilepsy, after receiving disability payments for a head injury, because he refused, on advice of his own physician, to submit to a pneumoencephalogram.[67]

Restricted Employment Opportunities

Applicants for employment, in private industry as well as government are required to disclose a history of epilepsy. Since the epileptic is disqualified from employment by medical standards he will keep secret his affliction until discovered in a convulsive seizure when discharge will frequently follow.

In some instances, federal and state laws, prohibit the employment of epileptics in positions such as trainmen, operators of moving vehicles, elevator operators, stationary engineers and similar types of work requiring licensed personnel.

A school teacher under contract, suffered an attack in the class room before her pupils averaging seven to eight years in age. They were badly frightened. Some ran screaming from the room. The school board discharged her. A court sustained the action.[68]

Immigration Law

Our immigration laws bar from permanent entry into the United States any person suffering from epilepsy. A physical examination is required of each immigrant to determine among other things, the existence of epilepsy. Any person, steamship company or other agency who knowingly assists an epileptic to illegally enter the United States, is subject to fine and imprisonment.[69]

Military Service

A diagnosis or history of epilepsy disqualifies any applicant for military service. Subsequent discovery of this condition will result in a medical discharge. Unless the convulsive seizure is due to service connected injury the indivdual is not entitled to compensation.[70]

Motor Vehicle Operation

In recent years, many state legislatures have enacted laws regulating the licensing of motor vehicle operators who are afflicted with, or who have a history of, convulsive seizures. The National Epilepsy League, Inc.,[70] has conducted a survey of the state laws and their administration. One state, South Dakota, has no motor vehicle licensing law at all. Two states (Maine and Missouri) have no provision for issuance of drivers' licenses to epileptics. Nine jurisdictions (Arizona, Kansas, Mississippi, New Hampshire, New Mexico, North Carolina, Ohio, Oklahoma, and South Carolina) arbitrarily forbid the issuance of drivers' licenses to all epileptics.

Fourteen states, either by law or administrative practice, require special examination and individual decision prior to the granting of driver's licenses to epileptics with the special examination being made by a motor vehicle examiner. (Arkansas, Delaware, Florida, Kentucky, Michigan, Minnesota, Montana, Nebraska, New York, North Dakota, Tennessee, Texas, Virginia and West Virginia.)

In thirteen others, either by law or administrative practise, medical consultation and a special examination is part of the epileptic applicant's test. Pennsylvania has consistently refused to grant licenses to known epileptics unless a three to five year period of freedom from attacks can be proven. In California the policy of the division of motor vehicles is to refuse an operator's license to any person having a history of epilepsy or related ailments, unless the applicant furnishes a statement from a reputable physician that the seizures, with or without medication, have been under control for a protracted period and that it is reasonable to assume the applicant will continue to be free of seizures, with or without medication. California and Indiana provide for individual decision in each instance, but in practice holds back the license until the patient has been free from seizures for three years.[7]

California, Indiana, Oregon, Wisconsin and New Jersey require reporting of all cases of epilepsy to the department of public health and this information is made available to the motor vehicle bureau.

The California State Law restricting issuance of driver's licenses to epileptics was approved in an article in the May 8, 1948 issue of the J.A.M.A. and it was recommended as a model for all other states. Dr. William Lennox, in the following issue of the same journal, registered a vigorous protest against the California law because its language applies to persons who have "lapses of consciousness which may be chronic" but the reporting of such lapses of consciousness applies only to epileptics and is therefore discriminatory.

The California Code defines epilepsy as follows:

"Any condition which brings about momentary lapses of consciousness and which may become chronic, shall be considered reportable under the term epilepsy."[72]

1. All physicians shall report immediately to the local Health Officer in writing, the name, age and address of every person diagnosed as a case of epilepsy or similar disorder characterized by lapses of consciousness.
2. The local Health Officer shall report in writing to the State Health Department the name, age and address of every person reported to it as a case of epilepsy.

The law further requires the State Health Department to make these reports available to the Motor Vehicle Bureau "which shall use this information for the purpose of determining the eligibility of any person to operate a motor vehicle on the highways of the State"[73] and shall not issue an operator's license to any person who is insane, feebleminded, an idiot, imbecile, or an epileptic.[74]

The drunks have their licenses revoked on a penalty basis for specific periods of time; heart cases, etc., are not penalized unless continued violations and occurrences of unconsciousness may require such revocation of licenses.

The procedure for granting motor vehicle licenses to the epileptic in California is disclosed in an article by Mark Albert Glasser, M.D. and Martin Irons, A.B., the latter an officer charged with the administration of this regulation in the Motor Vehicle Department. They seek to support their procedure on the basis of a survey made by sending questionnaires to members of the American Chapter of the International League against Epilepsy.

For the patient's protection, the law provides that an epileptic whose license is to be revoked may petition for a full and complete hearing which, however, is of little avail as his license is revoked even though an effective control has been established under therapy. An epileptic is occasionally reinstated on a highly selective basis, after a period of three or more years of freedom from seizures.[70]

In a Pennsylvania case, it was held that the right to operate a motor vehicle on a public highway is subject to regulation under the police power which has been embodied in the Vehicle Code. A qualified person may not be deprived of the privilege of obtaining a license by arbitrary action. If an applicant is aggrieved by the action of the department he may have recourse to the courts. There is common agreement that a person afflicted with epilepsy may be incompetent or unable to exercise reasonable control over a motor vehicle. But this conclusion may be refuted by testimony to the effect that the seizures are under adequate control, and that the person is not now subject to epileptic seizures.[75]

A committee from the Eastern Conference of Motor Vehicle Administrators is presently working on a survey of neurologists and neuropsychiatrists with the hope of determining some tangible and uniform method for an individualized approach in each case.[70]

Summary and Conclusion

To society's fear and aversion of the insane and mental deficient, in the case of epilepsy, there has been added the most prejudicial residuals of the almost extinct fad of eugenics. The epileptic who already suffers an organic, social and psychological handicap is sometimes further restricted and handicapped by the lack of understanding in the law which is intended for society in general and has not been broadened to meet particular needs.

The law recognizes the various symptoms and manifestations of epilepsy, and passes judgment on them as they violate accepted standards of behavior. Society too often unjustly places the burden of responsibility for his behavior on the epileptic, when it is a manifestation of the disease whose symp-

tomatology is so little understood. There is no uniformity in the application of these penal or restrictive enactments nor in the more enlightened attitude shown by some states in providing scientific methods for the care, therapy and education of epileptics.

The need to progress from traditional attitudes to modern science and humanism requires a bridge of acceptance through education and understanding. Slowly, too slowly, we are making progress and accepting responsibility.

BIBLIOGRAPHY

1. Wharton and Stilles: "Medical Jurisprudence," 5th Ed., Vol. 1, Sec. 854-860, *Lawyers' Co-operative Publishing Co.*, Rochester, N. Y., 1905.
2. Luke 9:37-43: The Holy Bible, American Standard Version, *Thomas Nelson & Sons*, New York.
3. Chapin, J. B.: "A Consideration of the Epileptic by the Courts." "Medicine," Vol. 10, pp. 112-115, *Swift, E. G.*, Detroit, 1904.
4. Ruskin, I. W.: Synthesis of Analysis of Many Other Definitions.
5. Spitzka, E. C.: "Insanity and the Law." Epileptic Insanity, Chap. XVIII, pp. 258-267, *E. B. Treat Co.*, N. Y. 1900.
6. Commonwealth v. Mosler: 4 Pa. 264.
7. Smith, S., and Fiddes, F. C.: "Forensic Medicine," 9th Ed., p. 394, *J. A. Churchill*, London 1949.
8. Commonwealth v. Rogers: 7 Mętcalfe 500 (1844) 41 Am. Dec. 458, McNaughten's Case, 8 Scott N. R. 595 (1843).
9. Osborn v. State: 143 Wisconsin 249.
10. Flannigan v. People: 52 New York 467.
11. Butler v. State: 102 Wisconsin 364, Blackburne v. State: 23 Ohio St. Rep. 146.
12. Taylor v. U. S. App. D. C. 27.
13. People v. Daros: 84 Pa. 209.
14. Wigmore on Evidence: 3rd Ed., Vol. 9, Sec. 2494, *Little, Brown & Co.*, Boston 1940.
15. Aurentz v. Anderson: 3 Pittsburgh 310.
16. Commonwealth v. Cawley: Pa. Case Quoted in Wharton & Stilles, Supra, Vol. 1, Sec. 878.
17. People v. Magnus: 92 Misc. Report 80 N. Y.
18. N. Y. Penal Code: Sec. 23 As Amended.
19. People v. Freeman: 61 Calif. Appeal 2nd 110.
20. People v. Sygert: 310 Mich. 401.
21. Compiled Laws of Michigan: 1948.
22. Kansas, Illinois, Iowa, New Jersey, New York, Oregon.
23. Kiernan, J. G.: "Medical Legal Relations of the Epileptic." *Chicago Medical Review*, Vol. 5, pp. 61-67, Feb. 1, 1882.
24. Clinton v. Epsis: 20 Arkansas 216.
25. Porter v. Woodruff: 92 Mich. 8.
26. Winspeer v. Accident Insurance Co., Ltd., 6 QB Div. 42.
27. Westphall v. Metropolitan: 151 Pac. Rep. 159.
28. Wishbone v. Yellow Cab: 20 Tenn. Appeals Report 229.
29. McLellan v. Tennessee: 174 Tenn. 58.
30. Krausnick v. Hagey: 163 A. L. R. 1413.
31. Kirschner v. Keller: 70 Ohio 11.
32. Singer H. D. and Krohn, Wm. O.: Insanity and the Law, pp. 273-274, *P. Blakiston's Son & Co.*, Philadelphia 1924.
33. Connecticut, Delaware, Ind., Kansas, Minn., Mo., Mich., Mont., Nebraska, N. H., N. Carolina, N. Dakota, N. J., Ohio, Ore., Pa., Utah, Virginia, Wash., W. Virginia, Wisc.
34. Remington Revised Statutes of Washington, Vol. 9, Secs. 8439-8452.
35. Compiled Laws of Mich.: 1948, Vol. 3, Chap. 551. 6.
36. General Statutes of Conn.: 1949 Vol. 3 Sec. 8592.
37. Gould v. Gould: 2 New Series L. R. A. 531.
38. General Statutes of Kansas: 1945 (1947 Supplement 23. 120).
39. Arizona Revised Code: 1928 Sec. 2166-2178.
40. McGill v. McGill: 226 N. Y. 673, N. Y. Domestic Relations Court 1943: Civil Practise Act 1139.
41. White v. White: 246 N. Y. App. Div. 879.
42. Landsman, J. H.: Human Sterilization. *McMillan Co.*, New York 1932.
42 a. Buck v. Bell: 274 U. S. 200 (1927).
43. Alstrom, C. H.: Study of Epilepsy in Its Clinical, Social, and Genetic Aspects, Acta Psychiatrica et Neurologica, Supplementum 63—1950—from the Caroline Institute Psychiatric Clinic for Human Genetics, Stockholm.
44. Hill v. Blair: 182 Mich. 20.
45. Andrejevski v. Woverine Coal: 182 Mich. 298.
46. Cook v. Holland Furnace Co., 200 Mich. 192.
47. Kutschmar v. Briggs Mfg. Co.: 197 Mich. 146.
48. Stenberg v. Raymond Co-op Creamery: 209 Minn. 366.
49. Barlow v. Minn. Moline Co.: 214 Minn. 366.
50. Ryland v. R. & P. Const. Co.: La. 2nd 349.
51. Mausert v. Albany Builders: 250 N. Y. 21.
52. Andrews v. L. & S. Amusement Corp., 253 N. Y. 97.
53. National Auto Ins. Co. v. Ind. Acc. Com., 75 Cal. App. 2nd 677.
54. Savage v. St. Adeden's Church: 122 Conn. 343.
55. Rockford v Industrial Commission: 300 Ill. 97.
56. Baltimore Drydock and Shipbuilding Co. v. Webster: 139 Md. 616.
57. Cusick's Case: 260 Mass. 421.
58. Carroll v. What Cheer Stable Co., 38 R. I. 421.
59. Georgetown College v. Stone: 61 App. D. C. 200.
60. Wicks v. Dowell Co., Ltd.: 2 K. B. 225.
61. Cox v. Kansas City Ref. Co.: 108 Kansas 320.
62. Van Gorder v. Packard Motors: 195 Mich. 588.
63. Croskey, R. J.: Statement in hearing before the Committee on Labor, House of Rep. 49th Congress, May 1945.
64. Johnson, W. B.: Statement before the same Labor Committee.
65. New York Workmen's Compensation Act: Sec. 15.8 (H).
66. Proposed Amendment to Ill. Workmen's Comp. Laws.
67. Cole v. Town of Miami: 52 Ariz. 488.
68. Anderson v. Consolidated School District No. 144 Hennepin County: 196 Minn. 256.
69. Navigazione Generale Italiana v. Etling: 290 U. S. 691.
70. Grey, B.: Unpublished Survey Material, National Epilepsy League, Chicago, Ill.
71. Glaser, M. A., and Irons, M.: Is the Epileptic a Safe Motor Vehicle Driver? *J. of Nerv. Dis.*, Vol. 103, No. 1, p. 21 (1946).
72. California Administrative Code: Title 17, Public Health, Chap. 4, Sec. 2572.
73. California Vehicle Code: Sec. 269.
74. Id. Sec. 270.
75. Commonwealth v. Irwin: 345 Pa. 504 (1943).

Psychology of "Daily Routine"

EDMUND BERGLER, M.D.
New York, N. Y.

In general, daily routine is the object of impersonal curses, the reason for reproaches directed against Fate, the basis for complaints of boredom and monotony. Few people admit to liking it; many are disturbed by even a temporary interruption of it. There are contemporaries who don't know how to enjoy their one-day holidays, much less their more protracted vacations.

Obviously, daily routine is more than merely the scapegoat of the malcontents; other qualities must also be included. Why should so many people "hate" it, while at the same time there is an unadmitted feeling, if not of pleasure, at least of security, which is derived from the routine? In short, what are the unconscious tributaries to the problem?

Every human being has a very active department of inner fears having no connection with dreary expectations experienced on the conscious level. Exaggerated conscious fears ("reality fear") are frequently only a convenient covering cloak for repressed inner fears.[1,2]

These irrational terrors, which are remnants of the undigested nursery past, are highly individualized, and specific for the specific individual.

Some method of alleviating these various fears is essential, and the boring daily routine is just such a fear-diminisher. "My glass happens to be a small one, but I am drinking from my own glass," a French poet once said. As far as he knew, he was referring to his "small talent"; without being aware of it, he was at the same time referring to his big fears.

Whatever the complaints leveled against it, daily routine unconsciously has a fear-diminishing effect because it confirms one of the few stable points in life—continuity. Continuity means stability; stability is the opposite of the terrifying new. This, however, is but a contributory factor.

The first real reason for the reassurance which flows from daily routine is the fact that routine reminds one, unconsciously, of the first place in which one learned a specific fixed order of activity—home. Home meant mother and father, and they were "always there." It is the unconscious (perhaps preconscious) association between routine and the home of one's childhood that gives routine its reassuring and fright-diminishing effect.

This deduction is based on the clinical observation of patients who had never had a "real home" when they were children. These people were less capable of enduring daily routine. The stabilizing factor was missing.

One could argue that if there is an unconscious association of "parental home" with "daily routine," exactly the opposite effect should be observable in once-homeless neurotics. The mechanism of defensive compensation should set in, making the now grown-up child an even stricter than usual adherent to routine. However, that actually happens very seldom. Perhaps this development is so infrequently encountered because it is the normal solution of the problem of overcoming childhood disappointments.

Amazingly, the security-promoting factor of home life overshadows the personal feeling of many neurotics that as children they were unhappy at home. The idyllic idea, common among naive people, that a "happy" home automatically produces "happy" children, is untenable. There are neurotic children in so-called happy homes, and normal children in unhappy homes.[3] The decisive point is how the unconscious ego elaborates on reality—as the child sees reality through the spectacles of megalomania, projection, psychic masochism. On the other hand, it is of course true that an unfavorable or broken home life can overtax a conflict arising independently.

It seems, however, that there is a fear-diminishing factor in the mere existence of any kind of home life. The reason may be that the reality of home counteracts the extravagance of projective misconceptions. The practical conclusion is inescapable: a child is an "18-year plan"—for the parents.

The second, also unconscious, factor in daily routine is this banality: it is disagreeable. This is less paradoxical than it may seem, for work absorbs a good deal of unconscious self-punishment.[4] An example of this intuitively known fact is the allusion in Genesis—Adam and Eve, expelled from Paradise, had to work as a punishment. Thus, daily routine has a salutary effect in "squaring one's bills" with the inner conscience.

The third unconscious mechanism involved in daily routine is a reproach by this inner conscience (super ego); the ego is accused of being capable of doing only the "stupid job" at hand. Hence many people constantly tell you, without seeing the contradiction, how complicated and monotonous their jobs are. Their complaint that their jobs are complicated is in inner reality directed at conscience; it denies the accusation. The complaint of monotony, too, is a vindicating inner accusation: "Why do you force me to this drudgery?"

Fourth, daily routine sets in motion a series of minor narcissistic recompenses. Work is disagreeable, true, but at the same time it satisfies narcissistic, aggressive, and even libidinous innuendos. Just as a child at play, afraid of a stern educator, will always assume that his game will be banned if he admits his pleasure in it; adult children use the same tactics to combat the inner Frankenstein of anti-hedonistic conscience. Some of the complaints about daily routine, therefore, are not to be taken at face value; they have an unconscious purpose.

Fifth, there are neurotics, mostly of the pronounced masochistic variety, who glory in pronounced "hatred of every enforced imposition." This unconsciously based defensive attitude, which covers the wish to be forced, helps to swell the great army of chronic conscious complainers about daily routine.

The sixth and decisive tributary, on the unconscious level, to complaints about "boring" daily routines is based on a diagnosis which is wrong to begin with, and is later shifted. At bottom, these complainers are neurotics suffering from the disease entity boredom ("alysosis"). Their grievance, they believe, is the routine itself, they do not understand that the target of their complaints should be their inability to construct and enjoy—fantasies. Whatever a person tells us about the amount of concentration necessary to do his particular job, the mere fact that a good part of his work is routine should leave him—if he is a not-too-neurotic person—time for fantasies and daydreams. One of the basic elements in alysosis is a voyeuristic inhibition; these sufferers have "poor imagination." It is true that anybody may occasionally, and temporarily, "run out of daydreams." With alysotics, this lack is chronic.

One could add to the reasons for complaints about daily routine, for instance, by singling out psychic masochists whose diet is self-pity. One could also point out that there are neurotics who are capable of doing only one kind of work; in an unconscious move to forestall conscience's accusation of complete but pleasant one-sidedness, the boring routine of complaining about boring routine is placed on the conveyer belt. I have in mind, as an example, a successful Broadway play of a few years back. In this play, a lawyer who had got into a mess because of a mistake made in the past in order to protect a client, was abandoned by his snooty wife. He tried to commit suicide, but was prevented from doing so. He immediately plunged into a new "case." This was the only thing he was able to do—it corresponded to his specific inner defenses.

All in all, the reasons enumerated above remind us to be less certain that even banal human attitudes—such as complaints about daily routine—are devoid of unconscious tributaries. It is easy to overlook them, but they are always present.

251 CENTRAL PARK WEST

REFERENCES

1. Bergler, E.: The Basic Neurosis, *Grune & Stratton, Inc.*, New York 1949.
2. ————: Neurotic Counterfeit—Sex, *Grune & Stratton, Inc.*, 1951.
3. ————: Divorce Won't Help, Chapter 9, *Harper & Bros.*, New York, 1948.
4. ————: Battle of the Conscience, Chapter 8, *Wash. Inst. of Med.*, 1948.
5. On the Disease Entity Boredom and Its Psychopathology, *Psychiat. Quart.*, 1945.

Importance of the Delirioid Reaction in Psychiatric Diagnosis

LESLIE B. HOHMAN, M.D.
Durham, N. C.

In this present psychiatric era of expanding interest in the psychodynamics of mental disease, a curious turn of events has occurred. The revolt of Adolf Meyer against the views of Kraepelin and to some extent Bleuler, namely, that mental disorders were disease entities, has been so oft repeated that it has become a psychiatric verbalism or meaningless cliché. Meyer refused to accept the hypothesis that the most fundamental etiology would prove to be organic—pathophysiologic (metabolic or endocrinologic) or structural brain disease.

Meyer's self-created philosophic system of integrative levels permitted him to see multiple etiologic factors in science. His adoption of pragmatism activated him to use multiple methods of study and treatment. His most fundamental objection to the disease entity concept was that nobody could produce evidence of any pathophysiological or structural abnormality. He found that neither Kraepelin nor any other psychiatrist could work with or study hypothetical "diseases" but had to evaluate each case according to its symptoms. The symptoms were approachable only by the route of psychologic understanding. It was Meyer's pragmatic position that, in the absence of definitive data, many factors must be taken into account and tested by rules of invariable sequence (Meyer's "experiment of nature").

His refusal to accept hypothetical disease entities drove him into a crusade against "labeling" of mental illnesses. World psychiatric interest was already turning to the study of the individual personality and its role in the development of mental abnormality. Freud, through Jung, profoundly influenced Bleuler who, in turn, influenced Meyer. Meyer's immediate acceptance of the term schizophrenia is clear indication of Bleuler influence.

From Duke University School of Medicine.
Read at Southern Psychiatric Association, Pinehurst, N. C., Dec. 11, 1951.

Meyer's proposal to use the concept of reaction types rather than disease sums up the positive side of his approach to psychiatry; namely, the study and use of multiple factors in etiology and diagnosis, including heredity, personality structure, psychodynamics, and "organic" etiology if it could be determined. Recall, if you will, Meyer's introduction to Cotton's ill-fated pathophysiologic hypothesis of colonic toxemia.

Now having again stated the working hypothesis of Meyer, let us look at what I have called the curious turn of events. Although verbally accepting the Meyerian hypothesis, American psychiatry has abandoned his theory of multiple factors and has taken up even more rigid "labeling" than ever before. There are only two major mental diseases today—schizophrenia and manic-depressive. Furthermore, there is only one etiology—unconscious psychologic conflict. There is so strong a conviction that this etiology is the only possible explanation of mental disorder that consideration of any other factors is considered old-fashioned, unenlightened, and even immoral. It is ground for banishment from the inner circle of the psychiatric elect.

I would like to insist that psychiatry is, under the unitary theory of etiology and the excessive new pigeon-holing of all major so-called functional psychoses into one of two categories, departing signally and disastrously from the rest of the medical sciences.

It is difficult to imagine medicine and surgery rejecting the study of the natural history of diseases. Etiology is certainly sought after eagerly, but there is still active and necessary interest in the course and outcome of disease. Therapy can only be evaluated in the light of knowledge of disease and outcome. It is this fact that has made use of control studies in therapy evaluation indispensable. The prime purpose of control studies is to learn the history of the disease without therapy. How dare psychiatry depart from this methodology!

Recovery from mental disease has been known long before any of the modern therapies came into existence. Reversibility of the process of mental abnormality to normality must be accepted as true for the natural history of many mental illnesses. It seems to me essential that, insofar as possible, the knowledge making for prediction as to reversibility be in the hands of therapists. How else are they to judge, in any scientific sense, whether their therapy is efficacious. It may be that so-called therapy merely accompanies mental illness and is standing by to take credit. Time itself may be the healing factor.

It is the purpose of this paper to point out certain observations and diagnostic signs that give clues as to the reversibility of some particular abnormal mental conditions. Too frequently, all cases (in our "new" labeling) are classified as schizophrenia unless they are clearly manic depressive. Many are reported later as cured when the essential features of the cases should have excluded the more ominous diagnosis of schizophrenia.

The older psychiatry—pre-psychodynamic—recognized a category of illnesses which were called "amentia," or acute hallucinatory, confusional insanity. More recently, Meduna has renamed this series of cases oneirophrenia—suggesting that they are most nearly to be analogized with the normal dream. Meyer used the meaningless term "individual psychoses."

I believe that a re-recognition of the dreamlike-state psychoses will enable us to differentiate this category of mental illness from schizoprenia. They are benign and reversible and can be recognized as such from the beginning.

Delirium, when there is a clear toxic, infectious, or exhaustive etiology, is clearly recognized in any general hospital but it has received altogether too little study as a *mental* reaction from psychiatrists. It can easily be diagnosed when disorientation and difficulty in grasp is present. The shifting levels of consciousness are less well known. The liveliness of the affect, and the phantasmagoric, shifting, protean delusional and hallucinatory experiences have not been studied enough to enable the psychiatrist to get the "feel" or gestalt of this type of delusional and hallucinatory material. The presence of subjective confusion either at the time of the psychosis or retrospectively is of prime importance.

It should be insisted that this type of *mental* reaction is perhaps the most common type of mental abnormality. It occurs in practically all people in the dream and in the drift into sleep.

To differentiate the mental reaction pattern from the accompanying physical abnormality in the delirium proper, I have for many years used the term delirioid. The term oneirophrenia is equally good and might well be adopted. The delirioid reaction is predictably reversible in the same fashion as is the affective reaction group.

All too frequently the mere presence of delusional and hallucinatory experiences in the patient is put down as schizophrenic without ever inquiring into the nature and meaning of the symptoms themselves. The delirioid delusions and hallucinatory experiences are multiform, rapidly shifting, dramatic and melodramatic. They do not often have the odd mystical distorted or vague character of the more malignant schizophrenic delusions. The delusions and hallucinations are extremely vivid as is the affect which accompanies them. The patient looks confused, and mixed-up and often feels subjective confusion. The rapid shift from relatively clearness to confusion and back again is very characteristic but can easily be overlooked except with the longer observation.

Even the disorientation and difficulty of grasp is often concealed and non-apparent, especially after the initial period of frank disorientation is past. It is our custom not to rely exclusively upon disorientation for time, place and person, but to search to find out if the patient is oriented for situation. Not infrequently, the absence of situational orientation gives the clue to the delirioid character of the reaction. It should be recalled that Bleuler was insistent that the diagnosis of schizophrenia should never be made in the presence of confusion and lack of perception clearness.

It should be pointed out that in the study of any reaction type, seldom does the whole of the classical symptomatology appear. The "pure" case exists only in textbook descrip-

tion. This is true for the delirioid reaction type. It can be said that as the symptomatology contains the fragments of the delirioid reaction insofar it argues for reversibility of abnormality. For example, phantasmagoric rapidly shifting melodramatic delusions resemble the delirioid reaction more than they do the schizophrenic or paranoid reaction. Content of delusions with roses, sweet incense, and heavenly angels is more delirioid than flowers which send out sexual odors and brain-poisonous odors.

To summarize the features of the reversible delirioid reaction, we have:

1. Defective grasp and perception with illusions, disorientation, with corresponding temporary memory defects.
2. Varying and shifting levels of consciousness from complete clouding to relative clearness.
3. Phantasmagoric, protean, shifting, melodramatic delusional material.
4. Subjective confusion.
5. Feeling of the dreamlike quality of the experiences.
6. Lively, although shifting, affect—fear, anger, depression, elation, awe, etc.

I would like to make a final point that the subjective confusion may be affective not only in the delirioid state but also may be the pervasive affect in an affective non-delirioid abnormality. Confusion or bewilderment or bafflement is usually subjectively experienced and is not to be mistaken for the delusion of the schizophrenic which appears confused to the observer but not to the patient. It is the feeling of confusion, mix-up, or bafflement of the patient that is diagnostic.

It is suggested that if cases that are delirioid are taken out of the schizophrenic group, we will probably have to reduce the number of "cured" schizophrenic reactions, but we may thereby improve our therapeutic critiques.

Report on Seven Lobotomy Operations

CLELA HARKNESS, M.D.
Indianopolis, Indiana

This is a report of seven cases of lobotomy with follow-up study and evaluations of the results of the operations.

Case 1, Mrs. H. A., was diagnosed dementia praecox mixed type catatonic and paranoid. This patient was considered normal, although reserved and somewhat seclusive. The onset of psychosis is said to have been in 1939. She was actively hallucinated, expressed delusions of being pregnant and being watched, and she had many religious ideas.

She had a course of metrazol in 1940, and again in 1941, showing some improvement following the treatments. In 1942, she had a course of insulin shock treatments, following which there was some improvement. Later she became mute, would obey commands, but refused to answer questions. She had to be fed but was not resistive.

The patient was admitted to Central State Hospital May 25, 1942, in a state of catatonic stupor. She was given electric shock treatments and showed a marked improvement. She became more cheerful and was sent to occupational therapy, where she did good work. She still had a few paranoid delusions. During the next 5 years she had periods of being antisocial, seclusive, suspicious, and at times resistive; at other times she appeared cheerful and cooperative. April 5, 1948, at age 35, a transorbital lobotomy was performed. After appearing improved for a few months her personality changed, and for the past four years she has been seclusive, suspicious, sullen, entirely withdrawn, profane, easily angered, and at times combative. She is not cooperative and spends her time sitting on the ward staring off into space. She has gained considerable weight during this post lobotomy period. She is less manageable since the lobotomy.

Case 2, Mrs. E. A., was diagnosed schizophrenia with psychopathic personality.

From Central State Hospital, Indianapolis.

This patient was apparently normal until adolescence, when she began to have tantrums, associating with undesirable people, and having indiscriminate sexual relationships. She was ill at ease, restless, argumentative, and suspicious. She moved from one job to another, never satisfied for more than a few weeks. She has been addicted to the use of alcohol from the age of 16 until her admission to Central State Hospital. She was married and divorced five times and had extra-marital sexual relationships. She was always erratic even prior to her first marriage.

In 1934, at the age of 30, the patient's personality changed, and she showed an increasing indifference both to members of her family and to accustomed interests. She developed auditory hallucinations and paranoid delusions. April 26, 1934, she was admitted to Central State Hospital. Her behavior in the hospital was vindictive, sullen, profane, uncooperative, and at times combative. In 1940, she was given deep insulin therapy, after which she improved for a few months. In 1941, she was given metrazol shock treatments and again showed improvement for a few months.

From 1944 until 1951, she was given repeated courses of electric shock therapy, showing temporary improvement after each course of treatment. April 3, 1951, at age 47, a bilateral transorbital lobotomy was performed in the hope that the patient would become more manageable. There has been no change in the patient's behavior since lobotomy except that before the lobotomy she always improved after electric shock therapy, but now there is no change in her mental state during or after electric shock therapy.

Case 3, S. M., was diagnosed schizophrenia paranoid.

This patient was considered a normal, though timid child. She was different from other girls in high school in that she was not interested in clothes nor boys. After graduation she tried unsuccessfully to obtain work, and this failure caused her to become listless, quiet, and dissatisfied.

Psychosis was first noticed in June, 1937, when she thought men were using an electrical machine on her. She became careless of her personal appearance and developed paranoid delusions. She was admitted to Central State Hospital November 18, 1937, at which time she thought every man she saw intended to rape her. On the ward she was quiet and cooperative, but preferred to be alone. She had auditory and visual hallucinations and paranoid delusions.

In 1938 she was given a course of metrazol shock therapy, after which she showed some improvement. In 1941 she was given deep insulin therapy and again showed temporary improvement. From 1942 to 1948, she received repeated electric shock treatments, always improving after treatment. January 13, 1948, she was discharged from the hospital greatly improved. November 20, 1948, at age 31, a prefrontal lobotomy was performed. February 16, 1949, she was returned to Central State Hospital. At this time she was aggressive, combative, and antisocial. Ambivalence and blocking were evident as were bizarre mannerisms. Later she became calm, listless, and uninterested in her surroundings. In the past four years there were fluctuating periods of tension, aggressiveness, and combativeness followed by periods of calmness, listlessness, and apathy.

Since lobotomy she has been difficult to manage.

Case 4, Mrs. R. B., was diagnosed schizophrenia catatonic type.

Her pre-morbid personality was quite rigid with fixed ideas of right and wrong, she had mixed socially with some participation in parties, and some dates. She gave the impression of always sitting and brooding and occasionally hearing voices.

The onset of the psychosis was three years prior to entering Central State Hospital. It was of gradual progression, characterized by restlessness, increasingly peculiar behavior, dissatisfactions, jealousies that became delusions of a paranoid type, staring off into space, confusion, repeated inspection of herself in a mirror, the development of hatred for her family with the development of feelings of sinfulness, the compulsion to make purchases in pairs, and lying without ostensible reason.

She was admitted to Central State Hospital August 8, 1948. Her behavior record in the hospital indicated a fluctuating response

with vulgarity, combativeness, anger, resistiveness, brooding, aphonia, and requirement that she be dressed by the attendant; at other times she appeared sad and cheerful, quiet and disinterested, only to be followed in a month by a flight of ideas, resistiveness, and catatonic type of excitement.

Given intensive electric shock therapy, she showed improvement. September 27, 1949, a prefrontal lobotomy was performed.

During the two-year post lobotomy period this patient has shown no improvement. Anxieties, tensions, obsessions, compulsions, incongruous thinking, hostilities, and combativeness remain the same.

Case 5, S. J., was diagnosed schizophrenia paranoid type.

This patient was considered a normal, sociable, well-adjusted woman until the age of 34. At this time her husband changed jobs. She heard a voice saying, "Dad will get a better job, better than you think." He did get a better job and the patient was grateful. She spent considerable time in church and prayer. She heard voices talking to her constantly so she was unable to rest day or night. She was extremely depressed and agitated and lost weight. Later she became afraid to go to church because the voices told her she was going to Hell and that God would punish her. She developed a "killing instinct," admitting she wanted to kill children. At this time the "devil" came to her in the shape of a locust.

The patient received 18 electric shock treatments with no improvement. At this time a psychiatrist said she was the most "hallucinated" woman he ever saw. August 9, 1949, a bilateral transorbital lobotomy was performed. Following the lobotomy, the patient felt she was improved, as she could make decisions a little more readily. She still had hallucinations during the day, but her nights were more quiet. November 18, 1949, she underwent a standard precision type of prefrontal lobotomy with approach made at the pterion points on either side of the skull. Following the second lobotomy she was extremely flattened, was carefree, childlike and was incontinent of urine. For a short time she still heard voices, but after a few weeks all hallucinations disappeared. Suddenly all her tensions and anxieties disappeared. She had always loved her home and had been a meticulous housekeeper, but after the lobotomies she lost interest in her home and refused to do any work. Money entrusted to her for household expenses was wasted on amusements. She developed a ravenous appetite, eating every hour, day and night. She gained 125 pounds in one year. She had never been institutionalized during her eight years of mental illness, but one year after her lobotomy operations her family felt they could no longer cope with her new personality and she was committed to Central State Hospital.

Since admission to the hospital she has been happy, sociable, carefree, and allergic to work. The patient is well satisfied with her lobotomy since she no longer has hallucinations, tensions, or anxieties. Her family is very unhappy about the complete change in her personality.

Case 6, B. F., was diagnosed psychoneurosis of the neurasthenic type with schizoid paranoid background.

This patient had an unsatisfactory and insecure childhood. She became an orphan at the age of 13 years and went to live with an aunt who took her out of school and put her to work in a factory where she worked only a few months when truant officers interfered, and she was sent back to school to finish the eighth grade. Unable to get along with her aunt, at the age of 14 years she ran away and secured employment in a confectionery store. She rented a room and lived alone. At this time she was always losing her purse and being put out of her room. She finally went to live with another aunt in Chicago, and worked as a waitress until she was 20 years old when she married.

Her married life was not happy, as her husband was an alcoholic and this situation caused many quarrels. She suffered three miscarriages caused by falls. There were no other pregnancies.

At the age of 26 years she became occupied with numerous bodily pains. Her first complaint was abdominal pain. Consulting numerous physicians, she was told there was nothing wrong with her. One physician told her she was just a silly girl wanting an operation. She finally found a doctor who op-

erated on her in 1934 at which time her appendix and one uterine tube was removed. In the next ten years she had three more operations; one for fallen colon; another a complete hysterectomy; and an exploratory laparotomy. Following each operation her symptoms subsided temporarily, only to return in a new physical complaint.

In 1950 she was given electric shock therapy for six weeks with no improvement. In April, 1951, a transorbital lobotomy was performed. Since there was no improvement in her condition in August, 1951, a prefrontal lobotomy was performed. In October, 1951, she attempted suicide by taking phenobarbital. Later she became hilarious, nervous, childlike, and seemed unable to realize her household responsibilities. She developed visual hallucinations for the first time. She was constantly seeing snakes and was afraid to be alone.

She was admitted to Central State Hospital February 9, 1952. Since admission this patient has had a sense of mental and physical fatigability, tension, and depressive affective tendencies. She was agitated and somewhat resistive when examined. There is an exaggerated degree of attention paid to the bodily organs.

This patient's post lobotomy history shows visual hallucinations, increased anxieties, phobias, and childlike behavior.

Case 7, M. T., was diagnosed manic-depressive.

Her pre-morbid personality is described as one of unstable nervous temperament, happy, sociable disposition, with a photographic memory, but no reasoning ability. She was considered normal but a little peculiar.

In 1935 the patient became very nervous, depressed, highly excitable, and unable to sleep. The psychosis grew progressively worse until in 1942, she became destructive, disoriented, incoherent, and displayed manical excitement requiring restraint.

She was admitted to Central State Hospital August 25, 1942. Her behavior in the hospital has shown periods of being quiet, cooperative, docile, and almost normal. Her manic phases have been preceded by a slight depression. Her manic phases have been characterized by psychomotor activity, insomnia, combativeness, irritability, destructiveness, and with a flight of ideas.

Her manic phases were always greatly improved following electric shock therapy. Prefrontal lobotomy was performed September, 1951. She did quite well for a short period of time and then slipped back into her talkative state.

Her post lobotomy history shows there has been no change in her mental condition. She still has periods of manical excitement followed by almost normal periods.

Summary

In an evaluation of 7 lobotomy cases that I have observed none have been improved except for a few months. Five of these cases were diagnosed schizophrenia, one manic depressive, and one neurasthenia. The duration of each psychosis before the lobotomy was performed was 9 years, 17 years, 11 years, 4 years, 8 years, 5 years, and 16 years respectively. All of these patients had received electric shock therapy, some had received metrazol shock therapy, and some deep insulin therapy, with temporary improvement after each course of treatment. Following the lobotomies not a single patient showed any improvement with electric shock therapy. Two patients had never been institutionalized until after the lobotomy.

After the lobotomy operation four patients showed improvement for a few months, two remained the same, and one showed a complete change of personality. At the present time five of these patients have become combative and difficult to manage, one remains the same, and one is relieved of all tensions and anxieties, but childlike and irresponsible.

It remains to be seen what further personality changes may take place.

Neurological Clinical Pathological Conference

of the

Cincinnati General Hospital

CHARLES D. ARING, M.D., *Editor*

CASE NO. 165031

Presentation

A 47-year-old colored housewife was admitted to the hospital August 11, 1950, with severe throbbing headaches, blurring of vision, nausea, vomiting, and vague abdominal pains. She died on October 2, 1950.

The patient, a frequent visitor, first became known to this hospital in 1932 when she came to the Medical Clinic with complaints of pain in the back and hips, painful micturition, chronic constipation and periodic frontal and right-sided headaches which had been present for about one year. General physical examination was not remarkable except for an abdominal scar from an operation for salpingitis two years before. The blood pressure was 120/80. The urine on one occasion was negative for albumin and showed epithelial cells and debris. She was followed at regular intervals in the clinic for those complaints, essentially without change, over a two-year period and then was not seen until April 1946, again because of severe headaches, often unilateral, of increasing frequency and severity. These were periodic, presumably related to marital tensions, and were throbbing, lasting several hours, and were associated with blurring of vision, occasional nausea, vomiting, and vertigo. Relief was afforded by firm pressure on the right temple and by white pills administered by her physician. Urinary symptoms of frequency, urgency, dysuria, and back pain again were elicited but she tended to accept them as part of life's burden and was occupied mostly with her headache. Examination revealed obesity, small lenticular opacities and scleral scars. Blood pressure was 210/100 and slight cardiac enlargement was observed. One urine was negative for albumin and sugar but showed occasional white blood cells. Another showed three plus albumin with occasional granular casts and leukocytes. A blood hemoglobin was 10.8 gm. per 100 cc. A phenolsulfophthalein test showed 40 per cent excretion in one hour.

She was placed on a reducing diet and given sedatives and was followed in the clinic at approximately monthly intervals for the next three years. Her blood pressure at these visits ranged from 145/90 to 230/135, varying more on earlier visits and hovering around 200/120 on later visits. Her complaints varied in intensity but not in theme until late 1947, when they were augmented by menopausal phenomena consisting of menstrual irregularities, menorrhagia, occasional intermenstrual spotting, hot flashes, and increased emotional instability. An enlarged irregularly nodular uterine mass, thought to be fibroids, was found on examination. Several specimens of urine were examined during this period which showed 1 to 3 + albumen and varying numbers of white blood cells in the sediment. Conservative management of her gynecologic disorders was instituted but the bleeding continued to present a problem in therapy, and she had a persistent anemia with hemoglobin varying from 7 to 11 gm. per 100 cc. despite iron therapy. Mild cardiac decompensation became manifest in 1949 with development of slight ankle edema, mild exertional dyspnea and occasional episodes of paroxysmal nocturnal dyspnea. A chest film in May 1949 showed marked cardiac enlargement predominately left ventricular, but no increase in vascular markings.

Because of the failure of conservative therapy to control the bleeding and anemia, operative intervention was elected, and she was admitted to the hospital in November 1949. Pertinent physical findings were scattered fine basal rales in the lungs, an enlarged heart reaching the anterior axillary line in the sixth interspace, a uterine mass, and minimal ankle edema. The cardiac rhythm was regular and the sounds of good quality. There was a soft blowing apical systolic murmur. The blood pressure was 185/120. The fundi showed arterial narrowing, but no exudate or hemorrhage. The hemoglobin was 6.5 gm. per 100 cc. and the white blood cell count was 8,100. The urine, with specific gravity of 1.010, showed 1+ albumin persistently and rare white blood cells in the sediment. The blood urea nitrogen was 42 mg. per 100 cc. The patient was digitalized, given a low salt diet, placed on bed rest, and given 1200 cc. of whole blood and on this regime her blood pressure fell to levels of approximately 140/85. A chest film showed slight but definite decrease in size of the cardiac silhouette. Intravenous pyelogram was unsatisfactory and retrograde pyelogram was normal. Approximately three weeks after admission a panhysterectomy and bilateral salpingoophorectomy was done and she withstood the procedure well. The specimen showed leiomyomas. Postoperatively she was given heparin prophylactically. Her course was not remarkable until the fifth hospital day when she suddenly had a severe vaginal hemorrhage and went into shock. Blood pressure dropped to 64/40 but quickly responded to transfusions. Bleeding was easily controlled by packing. There was no further difficulty, and she was discharged on the tenth postoperative day with a blood pressure of 130/70.

Following discharge her blood pressure quickly returned to previous levels being recorded as 210/120, a month after discharge. She complained

of frequent, moderately severe headaches, choking sensations, and pain in the chest radiating down both arms to the elbows which occurred at rest as well as with exertion or excitement. She developed mild persistent ankle edema and exertional dyspnea. Physical examination disclosed marked retinal arterial spasm with hemorrhages and exudate (grade III) and the enlarged heart which now had a coarse systolic apical murmur. Chest film again showed marked cardiac enlargement.

In June 1950 she again entered the hospital for evaluation. Her complaints and physical examination were the same as before and papilledema was now present. The blood urea nitrogen was elevated to levels of 70 mg. per 100 cc. on several determinations and the creatinine was 3.4. The hemoglobin was 8 gm. per 100 cc. and the red cell count 2.8 million. On lumbar puncture, clear cerebrospinal fluid was obtained; the pressure was 230 mm. of water, otherwise it was normal. There was a persistent 3 to 4+ albuminuria and a few red and white blood cells and granular casts in the urine.

Electrocardiographic findings on this admission were the same as those of numerous previous tracings: sinus rhythm, PR .16 sec., QRS duration .08 sec., T wave inversion in leads 1, AVL, V5 and V6, and was considered typical of "left ventricular strain."

She adjusted well to the hospital routine and was made comfortable with sedatives, low salt diet, and estrogenic substances given for hot flashes. She freely ventilated many resentments and frustrations of her family and marital life. Her blood pressure averaged approximately 180/110 while she was at bed rest.

She remained about 1 month and then was followed in the clinic until August 11, 1950, when she was again admitted because of headaches, nausea and vomiting, and blurring of vision gradually increasing in severity over the previous month. Physical examination revealed no new findings, and the laboratory studies were similar to those previously obtained. Despite conservative management her blood urea nitrogen gradually rose to levels of 160 mg. per 100 cc., and the creatinines varied between 8 and 10 mg. per 100 cc. The CO_2 combining power dropped to 20 vol. per 100 cc. She developed diarrhea, itching of the skin, drowsiness, and troublesome vomiting, and on one occasion had severe epistaxis. Terminally she had repeated generalized convulsive seizures. A lumbar puncture showed clear fluid under a pressure of 240 mm. of water. The protein was 57 mg. per 100 cc. There were no signs of localized cerebral disease. Chest film showed no significant change in heart size and the lung fileds were clear. She became delirious and then comatose. Terminally the urinary output was diminished, but accurate records were not obtained due to incontinence although the output was estimated at less than 500 cc. in 24 hours. She expired at 8:35 P.M., October 2, 1950.

Differential Diagnosis

Dr. Eugene B. Ferris: This case is an instance in which we are able to follow the course of the hypertensive disease from beginning to fatal termination. Also we can recognize certain factors in the external and internal environment which determined to some extent the natural history of the disease in this patient.

In summary, the patient was first observed in 1932 at the age of 28 with symptoms of back pain, painful urination, and headaches. Around this time a two-year period of observation in the Clinic indicates that the patient continued to have the initial symptoms of pain in the back, frequency and pain on urination, and headaches, and that she then had a normal blood pressure. She was next seen in 1946, and at this time she had a fluctuating type of hypertension which gradually became more sustained, and her complaints centered mainly around headaches. These headaches were similar in nature to the headaches which she had had before her blood pressure became elevated. The record of urine examinations sometimes showed albuminuria.

In 1949 the studies revealed some cardiac involvement as indicated by enlargement of the heart and some intermittent symptoms of early congestive heart failure, and a limitation in renal function as indicated by a blood urea nitrogen of 42 mg. per cent. Still the hypertensive, vasospastic process could be considered to be benign as indicated by the absence of hemorrhage and exudate in the optic fundi and the fact that the blood pressure under observation fluctuated rather widely from high levels to levels as low as 140/85. After this period of observation, because she was having uterine bleeding which could not be controlled, she was subjected to a hysterectomy and bilateral oophorectomy. Soon there was marked exacerbation of her symptoms and she came to the hospital with the classical signs of malignant hypertension with hypertensive encephalopathy. Previously her fundi had shown only vasospastic phenomena, changes limited to the blood vessels without retinitis. In the next examination she not only had these changes but also hemorrhages, exudate, and papilledema.

The questions which arise in this case are

essentially the following: First, is this a typical case of essential hypertension, or is it complicated by the presence of renal disease and if so, what kind? Second, we would wonder about the mechanism of some of the symptoms, particularly the headaches and how they relate to the hypertensive disease from which she suffered, and, third, what factors had been of importance in influencing the course of the disease? I raise this last question because study of patients with hypertension has revealed that stresses of any kind, both internal and external—external stresses being particularly related to emotional stress situations—are of great importance, not only in precipitating the onset of high blood pressure but also in precipitatting and accelerating the complications and course of the disease. Although the protocol contains little factual information in that direction, there are clues that would lead to the raising of more questions such as the close relationship between her headaches and her marital tensions and the fact that she developed malignant hypertension following hysterectomy. In our experience such procedures are frequently associated with rapid progression of the disease, and I would wonder about the role of the operative procedure in the final illness in terms of what it meant to the patient.

Insofar as the functional diagnosis is concerned, this seems to be a typical case of high blood pressure which ran a relatively benign course for many years and rather suddenly blossomed into a malignant phase following the operation. The shift from the benign to the malignant phase is best recognized by the changes that I have mentioned in the fundi which showed initially grade II changes and finally retinitis with hemorrhages, exudate, and papilledema. The papilledema appears to indicate the presence of so-called acute hypertensive brain edema that we see in this particular type of hypertensive encephalopathy; this is verified by the elevated cerebrospinal fluid pressure. So, we can make the functional diagnosis of malignant, or accelerated phase of hypertension.

As to the etiology of the renal disease, the diagnosis lies between nephrosclerosis, commonly associated with essential hypertension (meaning that we don't know the cause), chronic pyelonephritis, and chronic glomerulonephritis. The rather long-standing genito-urinary symptoms and particularly the long-standing albuminuria in this case are unusual in uncomplicated nephrosclerosis, and they are common in the two latter renal diseases. Of further significance is the rather gradual and somewhat chronic elevation in the blood urea nitrogen which we note in this patient. As a rule in nephrosclerosis elevation of the blood urea is an ominous prognostic sign and after it occurs, uremia rapidly supervenes; whereas in glomerulonephritis and pyelonephritis patients may carry an elevated blood urea nitrogen for months and sometimes for a year or more before fatal uremia develops. On the basis of this reasoning I would conclude that this patient has, in addition to the nephrosclerosis that would occur with any form of hypertension, a chronic pyelonephritis because of the long-standing history of genito-urinary symptoms, pain in the back, frequency of urination, and occasional white cells in the urine. I think it's worth noting that throughout the early two-year period of observation little attention was focused on the urine so we don't have accurate information about that except from the symptomatic point of view, but with the information we have, the renal disease is probably chronic pyelonephritis rather than chronic glomerulonephritis.

Now to the question of etiology of the hypertension and the relationship of the renal disease to it. We are inclined to search for the presence of renal disease in an effort to make an etiologic diagnosis and thus differentiate between essential hypertension and hypertension associated with chronic renal disease. In most people's experience, as far as the course of the disease and its natural history is concerned, there is no difference between the hypertension that we think of as essential hypertension and that which we see in association with chronic renal disease. As a matter of fact, Doctor T. Brent Wayman has recently reviewed the literature concerning the relationship of renal disease to hypertension and finds that hypertension is not a great deal more common in renal disease than it is in non-renal disease. In

other words, there is not nearly as good a correlation between hypertension and primary renal disease as we generally think. Furthermore, in at least 50 per cent of patients in the late stages of pyelonephritis the blood pressure is normal. So, there has to be something in addition to renal disease to produce the hypertension. I would, therefore, not emphasize the renal disease as a primary etiologic factor in this case, but as a factor which, when present, makes people more susceptible to hypertension.

I think the localization of most of the symptoms is pretty clear, the genito-urinary system, the cardiac failure, and the uterine bleeding. The headaches are worth commenting on because of the commonly held notion that headaches are caused by hypertension and the general tendency to tell patients with headaches and high blood pressure that headache is due to the hypertension. In our case you will note that the patient had the headache before she suffered the onset of hypertension. In our studies we haven't found any close relationship between the level of the blood pressure and the severity of the hypertensive vascular process and the presence or absence of headaches. In other words, some patients with hypertension tend to have headaches and other patients with hypertension simply don't have headaches at all. Despite the general feeling that headaches may be indirectly related to some of the factors that elevate the blood pressure, there is no direct causal relationship between them, and I think there is evidence in this case to bear this out. The mechanism of headaches in hypertensives is essentially the same as in normotensives. In this case some of the headaches appear to be migraine and others tension headaches.

As to the relation of emotional factors to the hypertensive process, I might mention a patient Doctors McGuire, Wayman, and I observed at the Holmes Hospital who I think summarizes the interrelation between structural and functional factors in the disease. This patient came in because of difficulty in vision, and he had typical malignant hypertension with hemorrhages, exudate, and papilledema in the eyegrounds. It was pretty clear in going over his story that this malignant exacerbation of a long-standing benign hypertension occurred in relation to some very stressful situations in his environment, and he appeared to be much like most patients who develop malignant hypertension. His total renal function was not abnormally low, but intravenous pyelograms revealed that one kidney was functioning well and the other not at all. In the hospital the patient improved without any specific therapy and began to revert slowly to a benign form of the disease. The kidney which was not functioning was then removed, and the patient rapidly and dramatically improved. He was sent home without any attention being paid to emotional factors; he went right back to his environment and has continued to live with the same problems he had before. He hasn't solved these problems, nevertheless after about three years his blood pressure is 120/80. Here is an excellent example of a structural factor—mainly unilateral renal disease—which taken together with other stresses of living produce the picture of overt clinical hypertension. In essential hypertension we do not know the factor which makes certain individuals susceptible to it. My final diagnoses are malignant hypertension with chronic and acute hypertensive brain disease, chronic pyelonephritis with terminal uremia, and hypertensive heart disease.

Student: Is the retrograde pyelogram usually diagnostic of pyelonephritis?

Dr. Benjamin Felson: Roentgen studies are usually normal in chronic pyelonephritis. However, in a relatively small percentage of cases there is some irregularity in the outline of the caliceal system which, unless marked, is not diagnostic because so many times normal variances look that way. However, shrinkage of the kidneys does occur secondary to pyelonephritis and if unilaterally or bilaterally small kidneys are demonstrated by retrograde or intravenous pyelography, differentiation must be made between congenitally hypoplastic kidney and shrunken atrophic kidney. Sometimes the distinction is impossible to make.

On many occasions we have been asked to do pyelograms on patients who have hypertension, and we have been able to demonstrate very little change in the kidneys; occasionally we run across a unilateral hydronephrosis. In addition, we have done abdominal arteriography with a needle through the back into the aorta of about 75 cases with hypertension, in a search for narrowing of the renal artery. We have not found it in those cases. We have had several patients with narrow renal arteries but they did not have hypertension.

Dr. M. A. Blankennorn: Do you think retrograde pyelograms should have been made more than once in our patient?

Dr. Felson: I would say that if there were distinct evidence of pyelonephritis, that films should have been repeated six or eight months later.

Dr. Richard Goldsmith: I'd like to suggest some discussion on the hematological disorder and the way in which this patient was handled. (1) I wonder if someone can tell us whether or not there is any correlation between the treatment the gynecologists gave her and the bleeding the patient suffered, or whether the patient just bled. (2) I wonder if there is any evidence that the anemia improved after radical surgery. The only statement given is that sometime postoperatively she had a hemoglobin of 8 gm. per cent. (3) I'd like to know whether the hematological disorder was treated and what the treatment was. It seems to me in retrospect that we appear to have a lady entering menopause and developing the menstrual changes seen then, with many emotional problems connected therewith and with hypertension. What would be the significance of a major operation of this type?

Dr. Blankenhorn: Does Dr. Ferris evaluate the menopause as an important factor in this patient?

Dr. Ferris: I don't know whether the menopause, from an endocrinological point of view, would have anything directly to do with altering the course of the disease. We have evidence that the meaning of the menopause to women experiencing it is the important thing. I wonder if Dr. Shapiro would comment on the relation of the operation to the hypertension?

Dr. Alvin Shapiro: I'd like to first answer Dr. Goldsmith's question about the anemia. Postoperatively she did show some improvement in her blood. Our studies uncovered much evidence that the hysterectomy represented rather severe emotional stress and was related to various similar developmental patterns in her background. We feel that this operation played a rôle in the exacerbation that occurred.

Interestingly, when she was moved from the home situation and into the hospital she improved remarkably without any other therapy. She expressed her attitude about the hospital, that this was like being protected, that she had no reason to be afraid here, that everybody took care of her and was interested in her. There was a great deal of obvious relaxation. By the time that she was discharged she had reverted to a somewhat more benign state with complete disappearance of papilledema. However, her renal situation was worse than it had been prior to the exacerbation; this appeared to be an inexorably progressing disturbance.

Dr. Joseph Ganim: Do I gather that the main surgical procedure was in some way contributory to a transition from a benign to a malignant phase of this hypertension?

Dr. Ferris: Well, the only evidence that I gleaned from the protocol was a time relationship. Exacerbations occur commonly in relation to operative procedures and the like; sometimes operations can have a stressful meaning to the patient over and above the trauma of the operation itself.

Discussion of Pathology

Dr. Pearl M. Zeek: The pathological diagnoses in this case, at least the essential ones, have been so accurately anticipated by Doctor Ferris that I will have little to say in discussion except to give a brief description of some of the organs that bear out those diagnoses. The kidneys were small and shrunken, weighing only 190 grams together, the capsules were adherent, and the surfaces were finely granular and also presented numerous shallow, flat scars radiating down toward the tops of the pyramids, so characteristic of chronic pyelonephritis. There was irregular thinning of the cortices, and the pyramids were streaked with gray and yellow, and the mucosca of the renal pelves showed marked thickening and opalescence and granularity, also typical of active chronic inflammation in the renal pelves. The mucosa of the bladder had a similar appearance indicating active inflammation in the urinary bladder.

The brain, removed 13 hours after death, weighed 1330 grams. No gross changes were seen in any of the cerebral vessels. There were a few old, small cysts of softening, none more than 2 mm. in diameter, scattered in the cerebrum. The largest of these was in the pons, to the left of the midline in the fibres of the brachium pontis. Microscopically these cystic areas were bordered by an abundance of glial fibrils.

I will show sections to prove that the patient had secondary vascular nephrosclerosis which is commonly, almost invariably, found in kidneys in the site of chronic progressive pyelonephritis. These vascular changes are frequently associated with hypertension which again is common in cases of bilateral pyelonephritis. I would like to emphasize here that some of the discrepancies in the statistics between the correlations or attempts at correlation between hypertension and pyelonephritis can be explained by the fact that pyelonephritis is frequently a unilateral disease at its beginning and may continue so for a considerable length of time. It has been established experimentally that hypertension may be only transient if the

renal disease is unilateral and that it does not go to a severe degree or to a maintained hypertension and certainly not to a malignant phase of hypertension in the face of a unilateral renal disease. But in cases of bilateral pyelonephritis, hypertension is very common as the disease becomes progressive and chronic. From a pathological standpoint I think I can say that the correlation is close and in a great majority of cases of chronic atrophic pyelonephritis where the kidneys are as small as they were in this case the patient does have hypertensive disease and frequently ends in a malignant phase of hypertensive disease. Therefore, I would like to emphasize the importance of pyelonephritis as a forerunner of hypertensive disease, and I think in this case that was true.

Pyelonephritis is a term that is used for inflammation of the kidney, inflammation both in the parenchyma of the kidney and in the renal pelvis. In the great majority of instances of bilateral pyelonephritis there is some evidence of obstruction to the lower urinary tract at some phase in the development of the lesion. As we look back at the history of this patient we can point to the fact that this patient had fibroids of the uterus and that possibly they may have played some role in initiating the condition of pyelonephritis. It would be interesting to know whether at operation any evidence of obstruction of the ureters was noted. At any rate the patient's condition was not improved when the fibroids were removed. However, that is what often occurs. Removal of the obstruction in cases of well-established chronic pyelonephritis does not cure the disease by any means. Once the organisms are established in the kidney, removal of the obstructive phenomena does not cure the disease, but it goes on to become chronic and progressive. Especially is this true if vascular changes have been initiated because then a vicious cycle is established. The more vascular changes, the more renal ischemia and renal hypertension superimposed upon whatever type of hypertension was present at the beginning. So, I think that was probably the sequence of events in this case.

In addition to the chronic progressive pyelonephritis, and secondary vascular nephrosclerosis which had become malignant terminally, and the active pyelitis and cystitis, there was also uremic pericarditis and there were some small infarcts in the heart associated with the vascular changes there. The vascular changes in this case in the arterioles—the acute vascular changes associated with the malignant phase of hypertension—were widespread and account for some of the terminal phenomena. There were old and recent military infarcts in the myocardium. The heart was markedly hypertrophied. It weighed 580 grams in a woman 165 centimeters in length, that is about 280 grams larger than the highest normal weight of the heart. There was slight early lobular consolidation of the lungs, involving all the lobes, and there was terminal lobular pneumonia.

Those are the most important findings other than a few things I'll point out when I show the slides. One other interesting finding—there was mucoid medionecrosis of the aorta. In other words, the stage was being set for a dissecting aneurysm in this case, and that is true of many cases of severe hypertensive disease. I think in the past we haven't emphasized that enough to clinicians so they feel that we only see mucoid medionecrosis in cases where we have a dissecting aneurysm. Here was a case where there was a considerable degree of it, and it is likely associated with arteriolar changes in the vasovasorum which are only part of the generalized arteriolar disease in cases of hypertension.

Microscopic study of the kidney revealed narrowing of the cortex and lymphocytic infiltration of the renal pelvis. On the outer surface there were small retention cysts and there was marked distortion of markings. There was faint and indistinct junction between cortex and medulla. There were typical lesions of chronic progressive pyelonephritis; many lymphocytes infiltrating the interstitial tissue of all portions of the kidney, thickening of the capsule around the glomuleral tufts, and sometimes hyalinization of the tufts; in places there were tufts which still appeared quite normal, but there was marked sclerosis and fibrosis of the capsule and then the secondary tubular changes—

degeneration of the tubules—probably terminally associated with arterial necrosis. Many of the tubules were atrophied, others dilated and cystic, and all of them showed various degrees of degenerative change.

The vascular changes were also marked. There was hyperplastic arteriosclerosis of small arteries so frequently associated with hypertensive disease; it's even more characteristic when found in arterioles which was the case here. There was various bizarre types of scarring of tufts, some of it secondary to vascular change, but most of it on the basis of pyelonephritis. The arteriolar change was general in the viscera, changes which we find in the great majority of cases of malignant hypertension. Whether they are caused by the malignant phase or whether they precipitate the malignant phase still waits further study, but at least they are present at autopsy when patients have died in the malignant phase of hypertension.

It would appear that the first morphological change is the presence of a macrophages in the intima of vessels. Macrophages loaded with fat filled the lumen of some arterioles. That apparently is just a transient phase. By far the most common appearance of arterioles in the malignant phase of hypertension is that in which there may be a lipoid protein combination that is deposited in the walls of these vessels. These same changes were present with occluded vessels in several of the viscera and may account for the miliary infarcts in the myocardium and perhaps for the military foci of necrosis in this brain which we call hypertensive encephalopathy.

This pink staining, homogenous material has been called hyalin. Hyalin is not a chemical substance; hyalinization means nothing more than that the vessel has taken on a glass-like appearance. Many tissues are spoken of as being hyalinized—epithelial cells, connective tissue fibers, and intima of blood vessels. When it occurs in blood vessels, it is probably a lipoid protein deposited there or a lipoid protein change of something that previously existed there. We don't know where it comes from, but a hyalinized vessel in the brain can be associated with a small area of softening. Placed strategically a hyalinized vessel can result in symptoms.

In the fat stains on frozen sections the arterioles of the kidney were loaded with lipoid material, the glomerular tuft capillaries were plugged with it. Probably the fat in the capillaries came from arterioles and really represents small fat emboli, broken off from the arteriole and lodged in the capillary of the tufts. This is a common finding in patients dying from malignant hypertension. Fat stains on most of the viscera reveal similar changes in all of them.

The final diagnoses are as follows: Chronic progressive pyelonephritis with secondary vascular nephrosclerosis, active pyelitis with cystitis, chronic, uremic pericarditis, acute atherosis (lipoid change) and necrosis of arterioles, widely disseminated, minimal vascular sclerosis—there was only minimal amount of fibrosis in vessels—hypertensive encephalopathy, old and recent miliary infarcts in the myocardium, cardiac hypertrophy, acute passive congestion of the abdominal viscera, and beginning mucoid medionecrosis of the aorta. Then there was also acute lobular pneumonia. The pleural cavities were obliterated by fibrous adhesions. Small pulmonary arteries were plugged with bone marrow. There were fat emboli in capillaries, if the patient had had a bone fracture, these things would be easier to understand. However, she had no fracture. We find these embolic phenomena occasionally, and we do not know the cause.

Clinical Diagnosis

Chronic pyelonephritis.

Hypertensive cardiovascular disease secondary to chronic pyelonephritis.

Uremia secondary to hypertensive cardiovascular disease.

Hypertensive encephalopathy secondary to hypertensive cardiovascular disease.

Dr. Ferris' Diagnosis

Malignant hypertension with chronic and acute hypertensive brain disease.

Chronic pyelonephritis with terminal uremia.

Hypertensive heart disease.

Anatomical Diagnosis

Hypertensive encephalopathy.

Widespread hyalinization of arterioles associated with hypertension.

Progressive chronic active pyelonephritis with secondary vascular nephrosclerosis.

Cardiac hypertrophy. Small myocardial infarcts, old and recent.

Terminal lobular pneumonia.

Terminal fat emboli in brain, pancreas, adrenals, kidneys, and other viscera.

Dr. Blankenhorn: Can we associate convulsions with fat embolism?

Dr. Zeek: Yes. However, the bone marrow which was present in the lung looked as though it had been there for a long time. It certainly didn't look like a terminal event; it was well attached. The small fat emboli in the lung could have been associated.

Dr. Blankenhorn: Would a study of the blood lipoid have thrown any light on the nature of the disease or the nature of the lesion?

Dr. Zeek: We have produced these vascular changes in rats by making them hypertensive by the renal perinephritis-ischemia method of Page. In those rats we have found the appearance of lipoid in these vessels has no correlation with the blood lipoids. In fact, we have found it less frequently in cases where we fed the rats cholesterol, less in those than we did in our stock rats. I'm inclined to think it has nothing to do with lipoid intake or with the amount of lipoid, but rather has something to do with the physical nature of the lipoid in the blood.

Dr. J. R. Wilson: Can bacteria be obtained through cultures in kidney disease?

Dr. Zeek: As a rule when the lesion has reached its final stage, no. In the early stages, yes.

Dr. Wilson: What does the reaction represent if there are no bacteria?

Dr. Zeek: Once the degeneration of the kidney begins, vicious cycles are set up so that the more scarring of tufts, the less oxygen can reach the tubules. The tubules degenerate and then there is lymphocytic reaction to that and vascular changes come on; hypertension may be initiated by the renal ischemia accompanying it. It's a complicated set of circumstances, but I can well see why the inflammatory reaction might continue long after the bacteria disappear.

Dr. Leon Schiff: Was there any arteriolitis here?

Dr. Zeek: The term arteriolitis has different meanings to different people. If by that you mean inflammatory reaction in the walls of vessels, then it is not what Goldblatt described. This lesion is one that Goldblatt describes as associated with hypertension. It's an arteriolar necrosis with little, if any, inflammatory reaction.

Dr. Schiff: You were referring to malignant hypertension?

Dr. Zeek: Yes.

Dr. Felson: Do you require necrotizing arteriolaritis in order to make a histological diagnosis of malignant hypertension?

Dr. Zeek: No, in fact if there is a real arteriolitis present, I'd suspect something else—a bacteremia—because inflammatory reaction is not ordinarily a part of the arteriolar changes associated with malignant hypertension. However, this change that I have described has been called arteriolaritis.

Dr. Arnold Iglauer: Suppose that one had recognized this patient had pyelonephritis and controlled it, would it have altered the clinical course?

Dr. Ferris: I would think so, if it had been treated rather strenuously in 1932 when it was first noted.

Dr. Iglauer: Was it treated at all?

Dr. Ferris: I don't think so.

Student: Doesn't one usually find the pelves and ureters dilated when there is contracted kidneys associated with chronic pyelonephritis? Would not a more careful examination of the retrograde pyelograms show that dilation and distortion of the pelvis?

Dr. Zeek: If the patient lives for a considerable time after the obstruction is removed, time enough for the contraction of scar tissue in the renal pelvis and the ureters, then we may not see much dilitation at the time of autopsy, but only thickening and fibrosis. This was the state of affairs in this case. I think the pelves were described as slightly dilated but the ureters were not dilated.

Student: Then it couldn't be diagnosed from the pyelograms?

Dr. Zeek: Possibly it could have been some years ago.